



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/613,068	07/10/2000	Se-Hyoung Kim	678-514-(APA9464	8817

7590 03/19/2004
Paul J Perrell Esq
Dilworth & Barrese
333 Eale Ovington Boulevard
Uniondale, NY 11553

EXAMINER

KADING, JOSHUA A

ART UNIT	PAPER NUMBER
----------	--------------

2661

DATE MAILED: 03/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/613,068

Applicant(s)

KIM ET AL.

Examiner

Joshua Kading

Art Unit

2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-18, 20-22, 25-34, 37, 38, 41-43, 45-47, 49-53 and 55-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 7, 8, 12-18, 20-22, 26-34, 37, 38, 41, 42, 45-47, 50-53 and 55-58 is/are rejected.
- 7) ☒ Claim(s) 4, 9, 10, 11, 25, 43, and 49 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 1, 2, 3, 5, 13, 16, 27, 30, 37, 51, and 53 are objected to because of the following informalities:

Claim 1, line 4 states, "one of an information bit stream". This is the second disclosure of "an information bit stream" in this claim. It leads to confusion later in the claim and in depending claims. It should be changed to --one of the information bit stream--.

Claim 2, lines 2-3; and claim 3, lines 1-2 state "the transmission time interval". There is no antecedent basis for this limitation. It should be changed to --a transmission time interval--.

Claim 5, line 2 states "the information symbols...parity symbols...has a regular". This should be changed to --the information stream...parity streams...having a regular--. It should be noted that "the information stream" is not plural as "the information symbols" because there is only one information stream disclosed.

Claim 13, lines 29 and 30 both state, "the parity symbols". There is no antecedent basis for this limitation. They should be changed to --the parity streams--.

Claim 16, line 4 states "corresponding each type". The word "to" should be inserted between "corresponding" and "each". i.e. --corresponding to each type--.

Claim 16, lines 3 and 5; claim 30, lines 3, 4, and 5; claim 38, lines 2, and 5; claim 42, line 2; claim 51, line 18; claim 53, lines 2, 3, and 4; and claim 55, line 2 all disclose "symbols". These should be changed to --streams--.

Art Unit: 2661

Claim 27, line 22 states "each parity symbol". There is no antecedent basis for this limitation. It should be changed to --each parity stream--.

Claim 37, line 25 states "each symbol". This should be changed to --each stream--.

Claim 51, line 16 states "one kind parity". The word "of" should be inserted between "kind" and "parity". That is, --one kind of parity--.

Claim 53 is stated as depending on claim 50. It is believed applicant intends to have claim 53 depend from claim 51, not claim 50. Therefore, claim 53 should be changed to depend from claim 51.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "at least one of the TTI" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

Art Unit: 2661

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 5, 7, 8, 12-17, 20-22, 26-30, 32-34, 37, 38, 41, 45-47, 50-53, and 56-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (AAPA).

Regarding claim 1, AAPA discloses "an uplink transmitting device in a mobile communication system, comprising:

an encoder for receiving an information bit stream and for outputting three streams, one of an information bit stream, one of a first parity stream, and one of a second parity stream by encoding the information bit stream (figure 1, element 110 where it is inherent in the encoder that parity symbols will be generated from the information bit stream because the parity symbols are used on the decoding (receiving) end to get the original message back from the coded data; page 2, lines 22-23 of the specification);

an interleaver for interleaving the encoded streams by a predetermined interleaving rule (figure 1, element 120 where it is inherent that the interleaver will have a predetermined interleaving rule because that is how the interleaver operates, that is to say it does not randomly interleave the streams because the receiving end would not know what the interleaving pattern was and could not de-interleave the streams, thus the interleaver, and de-interleaver, must have a predetermined rule for interleaving);

Art Unit: 2661

a radio frame segmenter for receiving the interleaved stream from the interleaver and mapping the received interleaved stream onto at least one consecutive radio frame (figure 1, element 130; specification page 2, line 26-28);

a rate matcher for bypassing the information bit stream and for puncturing a part of the first and second parity streams according to a given rate matching rule (figure 1, element 140; specification page 3, line 1-4 and knowing the parity symbols must be part of the encoded data).

AAPA lacks "a demultiplexer for separating each of the at least one radio frame received from the radio frame segmenter back into said three streams".

Although AAPA does not explicitly disclose a demultiplexer, AAPA does explicitly disclose a multiplexer (figure 1, element 150). It would have been obvious to one with ordinary skill in the art at the time of invention to include the demultiplexer with the rest of the transmitting device because if the data is multiplexed at element 150 and transmitted to another device like the device in figure 1, that device must have a demultiplexer to undo the multiplexing and to access each of the separate data streams (and parity streams).

The motivation for including the demultiplexer with the rest of the transmitting device is to undo the multiplexing of element 150 to access and further process the incoming data.

Regarding claim 13, AAPA discloses "a transmitting device in a mobile communication system, comprising:

an encoder for receiving an information bit stream transmitted at a predetermined transmission time interval (TTI) and for outputting the information bit stream and at least one type of parity stream by encoding the information bit stream in accordance with a coding rate of said encoder (figure 1, element 110 where it is inherent in the encoder that parity symbols will be generated from the information bit stream because the parity symbols are used on the decoding (receiving) end to get the original message back from the coded data; page 2, lines 22-23 of the specification);

an interleaver for receiving the information bit stream and the at least one type of parity stream from the encoder, for interleaving the information bit stream and the at least one type of parity stream and for outputting interleaved stream (figure 1, element 120 where it is inherent that the interleaver will have a predetermined interleaving rule because that is how the interleaver operates, that is to say it does not randomly interleave the streams because the receiving end would not know what the interleaving pattern was and could not de-interleave the streams, thus the interleaver, and de-interleaver, must have a predetermined rule for interleaving);

a radio frame segmenter for receiving the interleaved stream from the interleaver, for dividing the received stream into radio frames, and for outputting the radio frames in sequence (figure 1, element 130; specification page 2, line 26-28);

a rate matcher for rate matching the streams received...and outputting rate matched streams, said rate matcher having at least one component rate matcher for rate matching a part of the parity stream, a number of the at least one component rate matcher being equal to a number of the parity streams (figure 1, element 140;

Art Unit: 2661

specification page 3, line 1-4 and knowing the parity symbols must be part of the encoded data)...”

AAPA lacks “a demultiplexer for receiving the radio frames and for demultiplexing the received radio frames back into the information bit stream and the at least one type of parity stream... wherein the demultiplexer switches each of the parity [streams] in the radio frames to said at least one component rate matcher corresponding to each of the parity [streams].”

Although AAPA does not explicitly disclose a “demultiplexer”, AAPA does disclose a multiplexer (figure 1, element 150). It would have been obvious to one with ordinary skill in the art at the time of invention to include the demultiplexer with the rest of the transmitting device because if the data is multiplexed at element 150 and transmitted to another device like the device in figure 1, that device must have a demultiplexer to undo the multiplexing and to access each of the separate data streams (and parity streams). The actual process of undoing the multiplexing of each stream, in effect switches each stream to the corresponding component of the rate matcher.

The motivation for including the demultiplexer with the rest of the transmitting device is to undo the multiplexing of element 150 to access and further process the incoming data.

Regarding claim 27, AAPA discloses “a method of transmitting in a mobile communication system, the method comprising the steps of:

Art Unit: 2661

receiving an information bit stream transmitted at a predetermined transmission time interval (TTI) (page 2, lines 20-21);

encoding the information bit stream and outputting the encoded information bit stream and at least one type of parity stream corresponding to the information bit stream, a number of the parity streams corresponding to a coding rate of an encoder (page 2, lines 21-25; figure 1 where there a plurality of bit streams in the figure and which are information versus parity is a matter of design choice);

interleaving the information bit stream and the parity stream and outputting the interleaved stream (page 2, lines 25-26);

dividing the interleaved stream into at least one radio frame and outputting the at least one radio frame, each of the at least one radio frame having a predetermined time frame (page 2, lines 26-27 where the segmenting is the same as dividing);

rate matching the... streams by a rate matcher (page 3, lines 1-3);

wherein each parity stream in the radio frame is switched to a component rate matcher corresponding to each of the at least one parity stream, said component rate matcher having at least one parity component rate matcher for rate matching a part of said at least one parity stream, a number of the at least one parity component rate matcher being equal to a number of the at least one parity stream (figure 1, elements 140 shows the individual rate matching components for each stream)."

AAPA lacks "demultiplexing the received radio frame back into the information bit stream and at least one type of parity stream".

Art Unit: 2661

Although AAPA does not explicitly disclose a demultiplexer, AAPA does explicitly disclose a multiplexer (figure 1, element 150). It would have been obvious to one with ordinary skill in the art at the time of invention to include the demultiplexer with the rest of the transmitting device because if the data is multiplexed at element 150 and transmitted to another device like the device in figure 1, that device must have a demultiplexer to undo the multiplexing and to access each of the separate data streams (and parity streams).

The motivation for including the demultiplexer with the rest of the transmitting device is to undo the multiplexing of element 150 to access and further process the incoming data.

Regarding claim 37, AAPA discloses "a transmitting device in a mobile communication system, comprising:

an encoder for receiving an information bit stream transmitted at a predetermined transmission time interval (TTI) and for outputting the information bit stream and at least one kind of parity stream corresponding to the information bit stream in accordance with a coding rate of said encoder (figure 1, element 110 where it is inherent in the encoder that parity symbols will be generated from the information bit stream because the parity symbols are used on the decoding (receiving) end to get the original message back from the coded data; page 2, lines 22-23 of the specification);

an interleaver for receiving the information bit stream and the parity stream from the encoder, for interleaving the information bit stream and the parity stream and for

Art Unit: 2661

outputting an interleaved stream (figure 1, element 120 where it is inherent that the interleaver will have a predetermined interleaving rule because that is how the interleaver operates, that is to say it does not randomly interleave the streams because the receiving end would not know what the interleaving pattern was and could not de-interleave the streams, thus the interleaver, and de-interleaver, must have a predetermined rule for interleaving);

a rate matcher for rate matching the information bit stream and the at least one kind received...and outputting rate matched streams, said rate matcher having at least one component rate matcher for rate matching a part of the parity stream, a number of the at least one component rate matcher being equal to a number of the parity streams (figure 1, element 140; specification page 3, line 1-4 and knowing the parity symbols must be part of the encoded data)..."

AAPA lacks "a demultiplexer for receiving the interleaved stream and for demultiplexing the received interleaved stream back into the information bit stream and the at least one kind of parity stream...wherein the demultiplexer switches each [stream] in the interleaved stream to the component rate matcher corresponding to each of the at least one kind of parity stream."

Although AAPA does not explicitly disclose a "demultiplexer", AAPA does disclose a multiplexer (figure 1, element 150). It would have been obvious to one with ordinary skill in the art at the time of invention to include the demultiplexer with the rest of the transmitting device because if the data is multiplexed at element 150 and transmitted to another device like the device in figure 1, that device must have a

Art Unit: 2661

demultiplexer to undo the multiplexing and to access each of the separate data streams (and parity streams). The actual process of undoing the multiplexing of each stream, in effect switches each stream to the corresponding component of the rate matcher.

The motivation for including the demultiplexer with the rest of the transmitting device is to undo the multiplexing of element 150 to access and further process the incoming data.

Regarding claim 51, AAPA discloses "a method of transmitting in a mobile communication system, the method comprising the steps of:

receiving an information bit stream transmitted at a predetermined transmission time interval (TTI) (page 2, lines 20-21);

encoding the information bit stream and outputting the encoded information bit stream and at least one kind of parity stream corresponding to the information bit stream in accordance with a coding rate of an encoder (page 2, lines 21-25; figure 1 where there a plurality of bit streams in the figure and which are information versus parity is a matter of design choice);

interleaving the information bit stream and the parity stream and outputting an interleaved stream (page 2, lines 25-26);

rate matching the... streams by a rate matcher, said rate matcher including at least one component rate matcher for rate matching a part of said at least one kind [of] parity stream (page 3, lines 1-3);

wherein each parity [stream] in the interleaved stream are switched to at least one parity component rate matcher corresponding to each of the at least one kind of parity stream, a number of the at least one parity component rate matcher being equal to a number of the at least one parity stream (figure 1, elements 140 shows the individual rate matching components for each stream)."

AAPA lacks "demultiplexing the interleaved stream back into the information bit stream and at least one kind of parity stream".

Although AAPA does not explicitly disclose a demultiplexer, AAPA does explicitly disclose a multiplexer (figure 1, element 150). It would have been obvious to one with ordinary skill in the art at the time of invention to include the demultiplexer with the rest of the transmitting device because if the data is multiplexed at element 150 and transmitted to another device like the device in figure 1, that device must have a demultiplexer to undo the multiplexing and to access each of the separate data streams (and parity streams).

The motivation for including the demultiplexer with the rest of the transmitting device is to undo the multiplexing of element 150 to access and further process the incoming data.

Regarding claims 2, 20, 32, 45, and 56 AAPA discloses the transmitting device of claims 1, 13, and 37 and the method of claims 27 and 51. Although AAPA lacks the demultiplexer of claims 1, 13, and 37 and the step of demultiplexing of claims 27 and 51, AAPA further discloses "the information bit stream is mapped onto consecutive radio

Art Unit: 2661

frames when the transmission time interval (TTI) of the information bit stream is longer than 10ms (page 2, lines 20-28 where any of the TTIs lead to a mapping onto radio frames)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the radio frame mapping of TTIs greater than 10 ms with the transmitting device in claims 1, 13, and 37 and the method of claims 27 and 51 for the same reasons and motivation as in claims 1, 13, 27, 37, and 51.

Regarding claims 3, 21, 33, 46, and 57, AAPA discloses the transmitting device of claims 1, 13, and 37 and the method of claims 27 and 51. Although AAPA lacks the demultiplexer of claims 1, 13, and 37 and the demultiplexing step of claims 27 and 51 AAPA further discloses "[a] transmission time interval (TTI) of the information bit stream is one of 10, 20, 40, and 80 ms (specification page 2, line 21)." It would have been obvious to one with ordinary skill in the art at the time of invention to include one TTI of 10, 20, 40, and 80 ms with the transmitting device in claims 1, 13, and 37 and the method of claims 27 and 51 for the same reasons and motivation as in claims 1, 13, 27, 37, and 51.

Regarding claim 5, AAPA discloses the transmitting device of claim 1. Although AAPA lacks the demultiplexer of claim 1, AAPA further discloses "an arrangement of the information [stream] and the parity [streams] in each radio frame [having] a regular pattern (specification page 3, lines 22-23)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the radio frame having a

Art Unit: 2661

regular pattern with the transmitting device in claim 1 for the same reasons and motivation as in claim 1.

Regarding claim 16, 30, and 53 AAPA discloses the transmitting device of claim 13 and the method of claims 27 and 51. Although AAPA lacks the demultiplexer of claim 13 and the demultiplexing step of claims 27 and 51, AAPA further discloses "[streams] of the radio frame are separated to the at least one component rate matcher corresponding [to] each type of parity stream in accordance with a regular pattern for arranging information [streams] and parity [streams] in each radio frame (specification page 3, lines 22-23)." It would have been obvious to one with ordinary skill in the art at the time of invention to include separating the radio frame into streams following a regular pattern with the transmitting device in claim 13 and the method of claims 27 and 51 for the same reasons and motivation as in claims 13, 27, and 51.

Regarding claim 38, AAPA discloses the transmitting device of claim 37. Although AAPA lacks the demultiplexer of claim 37, AAPA further discloses "the demultiplexer switches each of the [streams] of the interleaved stream to the at least one component rate matcher in accordance with a regular pattern for arranging information [streams] and parity stream in the interleaved stream (page 3, lines 6-8 where the operation of the multiplexer is done in reverse for the demultiplexer, therefore the radio frames multiplexed by element 150 are demultiplexed at the receiving end back into there respective streams)." It would have been obvious to one with ordinary

Art Unit: 2661

skill in the art at the time of invention to include the demultiplexer switching the streams with the transmitting device in claim 37 for the same reasons and motivation as in claim 37.

Regarding claims 7, 14, 28, 41, and 52, AAPA discloses the transmitting device of claims 2, 16, 30, 38, and 53. Although AAPA lacks the demultiplexer of claims 2, 16, and 38 and the method of claims 30 and 53, AAPA further discloses "the consecutive radio frames having initial symbols determined by a TTI (specification page 2, lines 21 and 23-24 where it is implied from the TTI's and the frame data size that the initial symbol will be different based on different TTI's)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the initial symbols determined by a TTI with the transmitting device in claims 2, 16, and 38 and the method of claims 30 and 53 for the same reasons and motivation as in claims 2, 16, 30, 38, and 53.

Regarding claim 8, AAPA discloses the transmitting device of claim 5. Although AAPA lacks the demultiplexer of claim 5, AAPA further discloses "the demultiplexer separates symbols of the radio frame into the three streams according to the regular pattern corresponding to the radio frames (page 3, lines 6-8 where the operation of the multiplexer is done in reverse for the demultiplexer, therefore the radio frames multiplexed by element 150 are demultiplexed at the receiving end and, as is known in the art, the radio frames are made of symbols (bits))." It would have been obvious to

Art Unit: 2661

one with ordinary skill in the art at the time of invention to include the further demultiplexing operation with the transmitting device in claim 5 for the same reasons and motivation as in claim 5.

Regarding claim 12, AAPA discloses the transmitting device of claim 1. Although AAPA lacks the demultiplexer of claim 1, AAPA further discloses "the rate matcher comprises: a first component rate matcher for rate-matching the information symbols; a second component rate matcher for rate-matching the first parity symbols; and a third component rate matcher for rate-matching the second parity symbols (figure 1, elements 140 where each stream has its own rate matcher 140)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the rate matching components for each stream with the transmitting device in claim 1 for the same reasons and motivation as in claim 1.

Regarding claims 15 and 29, AAPA discloses the transmitting device of claim 14 and the method of claim 28. Although AAPA lacks the demultiplexer of claim 14 and the demultiplexing step of claim 28, AAPA further discloses "the regular pattern is further determined by the coding rate (page 2, lines 20-25 of the specification)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the determining the pattern using the coding rate with the transmitting device in claim 14 and the method of claim 28 for the same reasons and motivation as in claims 14 and 28.

Regarding claim 17, AAPA discloses the transmitting device of claim 13. Although AAPA lacks the demultiplexer of claim 13, AAPA further discloses "a multiplexer for multiplexing the rate matched streams outputs of at least one component rate matcher (figure 1, element 150 where 150 takes in the different streams from the different rate matcher components 140 and multiplexes them)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the multiplexer with the transmitting device in claim 13 for the same reasons and motivation as in claim 13.

Regarding claim 31, AAPA discloses the method of claim 27. Although AAPA lacks the demultiplexing of claim 27, AAPA further discloses "multiplexing the rate matched streams by synchronizing the multiplexing with the demultiplexing by switching to the corresponding component rate matcher (figure 1, element 150 where 150 takes in the different streams from the different rate matcher components 140 and multiplexes them together, and at the receiving end of the system the multiplexed streams must be demultiplexed back to their corresponding rate matchers to be processed)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the multiplexer with the method of claim 27 for the same reasons and motivation as in claim 27.

Regarding claim 42, AAPA discloses the transmitting device of claim 38. Although AAPA lacks the demultiplexer of claim 38, AAPA further discloses "a multiplexer for synchronously multiplexing the output [streams] of the at least one component rate matchers by synchronizing with the demultiplexer (figure 1, element 150 where 150 takes in the different streams from the different rate matcher components 140 and multiplexes them together, and at the receiving end of the system the multiplexed streams must be demultiplexed back to their corresponding rate matchers to be processed)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the multiplexer with the transmitting device of claim 38 for the same reasons and motivation as in claim 38.

Regarding claim 55, AAPA discloses the method of claim 51. Although AAPA lacks the demultiplexing of claim 51, AAPA further discloses "multiplexing the output streams of the rate matching step by synchronizing the multiplexing with the demultiplexing by switching in the rate matcher (figure 1, element 150 where 150 takes in the different streams from the different rate matcher components 140 and multiplexes them together, and at the receiving end of the system the multiplexed streams must be demultiplexed back to their corresponding rate matchers to be processed)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the multiplexer with the method of claim 51 for the same reasons and motivation as in claim 51.

Art Unit: 2661

Claims 22, 26, 34, 47, 50, and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Eroz et al. (U.S. Patent 6,370,669 B1).

Regarding claims 22, 34, 47, and 58, AAPA discloses the transmitting devices of claims 13 and 37 and the method of claims 27 and 51. AAPA lacks "the coding rate is 1/3." However, Eroz discloses a "coding rate" that is 1/3 (figure 9 where the coding rate R is 1/3). It would have been obvious to one with ordinary skill in the art at the time of invention to include the coding rate of 1/3 with the transmitting device of claims 13 and 37 and the method steps of claims 27 and 51 for the purpose building code rates of 1/4 and 1/5. The motivation being that 1/4 and 1/5 code rates are optimal rates (Eroz, col. 10, lines 36-40).

Regarding claims 26 and 50, AAPA discloses the transmitting device of claims 13 and 37. AAPA lacks "the encoder is a turbo encoder." However, Eroz discloses "the encoder is a turbo encoder (figure 2, element 208 shows a turbo encoder)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the turbo encoder with the devices of claims 13 and 37 for the purpose of yielding near theoretical bit error rate limits for different classes of data. The motivation being that a theoretical bit error rate is the best performance possible.

Allowable Subject Matter

Claims 4, 9, 10, 11, 25, 43, and 49 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shiu et al. (U.S. Patent 6,392,572 B1) and Mousley (U.S. Patent 6,671,851 B1) each show a rate matching, encoding, interleaving, and multiplexing system. Jacobsmeier (U.S. Patent 5,541,955) shows encoding data, mapping, and transmitting data. Belaiche (U.S. Patent 6,510,137 B1) and Lucidarme et al. (U.S. Patent 6,675,016 B2) each show a rate matching, encoding, interleaving, and multiplexing system.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 2661

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Response to Arguments

The new drawings submitted 12 January 2004 are accepted and the objection to the drawings is withdrawn.

Applicant's arguments, see page 14, paragraph 4, filed 12 January 2004, with respect to the foreign priority objection have been fully considered and are persuasive. The objection of the claim for foreign priority has been withdrawn.

The new abstract submitted on 12 January 2004 is accepted and the objection to the abstract length is withdrawn.

The corrected or cancelled claims 16, 19, 41, and 44 are accepted and the objections are withdrawn.

Applicant's arguments, see page 15, paragraph 4, filed 12 January 2004, with respect to 35 U.S.C 112, first paragraph rejection of claim 4, have been fully considered and are persuasive. The rejection of claim 4 has been withdrawn.


Art Unit: 2661

Applicant's arguments with respect to claims 1-3, and 5-7 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Kading whose telephone number is (703) 305-0342. The examiner can normally be reached on M-F: 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Olms can be reached on (703) 305-4703. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JK
March 15, 2004



KENNETH VANDERPUYE
PRIMARY EXAMINER

Joshua Kading
Examiner
Art Unit 2661